ENVIRONMENTAL TOPICAL AREA
CONTINUING TRAINING

Analytical Laboratory Facility Oversight

SELF-STUDY GUIDE

Produced by
U. S. DOE - Rocky Flats Field Office
Training and Technical Qualifications Group

Additional copies of this guide can be downloaded from the Internet
http://cted.inel.gov/cted/rfv/video.htm

GOAL

The goal of this learning activity is for you to apply your knowledge of environmental compliance. This is accomplished through short video vignettes that address common issues and potential problems found throughout DOE facilities. You will be introduced to five key questions that you will use to resolve the issues presented in the vignettes. When you know how to analyze situations and ask the right questions, the issue is mostly resolved.

This is program 2 which includes identifying the oversight issues found at DOE analytical laboratory facilities.

MATERIALS

You will need the following materials to complete this self-study activity:

- Program 2 video tape
- A VHS VCR and television monitor
- Pencil or pen for taking notes

PRE-REQUISITES

This is a program of "continuing training." To get the full benefit of these learning activities it is recommended that participants have a basic knowledge of the information found in the Environmental Technical Qualification Program Self-Study Guide. This guide is available from the DOE Clearinghouse for Training, Education and Development web site at http://cted.inel.gov/cted/trainmat.html.

HOW TO PROGRESS THROUGH THE ACTIVITY

This self-study guide will take you step-by-step through this activity. It is important to read through these instructions completely before beginning.

The video tape has short vignettes that you will play for a few minutes and, when prompted, stop the tape to review what you saw and record your answers. Do not let the tape continue to play into the next section until you have had a chance to write down your responses.

An exact duration for this learning activity is not indicated. The length of time it will take to complete depends on how much time you take to answer the questions posed. At least two hours should be allowed.

Be sure to take a break when you need one. Set up the VCR and monitor in front of you in a comfortable position; then begin when you are ready.

BEGIN

INTRODUCTION - Start the video tape. The video begins with a brief introduction and asks the viewer to obtain the correct guide.

PART I - Sharon (the Environmental Programs manager) and Karen (a Facility Representative who also serves as an Environmental Engineer) discuss analytical laboratory oversight activities.

In the first segment, you should observe the terrain, conditions, and activities that are covered by a regulation or policy that you are expected to apply.

Example: Activities may result in emissions to the air; therefore, you will be concerned with the "Clean Air Act."

Stop the video tape when asked and take a few minutes to answer the five key questions starting on page 5. Then address the question regarding Karen's scope of responsibility. When you are finished compare your answers to the information listed on page 7 and continue the video when ready.

The Five Key Questions

1. "What is happening?"

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2. "What 'questions' should I ask?"

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3. "What research should I do?"

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4. "What 'rules' apply?"

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5. "What are the overlaps (interrelationships), if any?"

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And an added question . . .

What kinds of issues should Karen consider?

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ANSWERS - The following are answers to the five questions that you should have come up with:

Karen had studied environmental engineering in college but had never worked in that role. She is knowledgeable but not experienced. Being "dual-hatted" there is a danger of loosing sight of one responsibility in favor of the other.

Karen should arrive at a clear understanding of both roles and establish task lists, requirements, and priorities for each role. This program focuses on Karen's Environmental Engineer duties.

Please note: Conditions and practices at locations across the DOE complex can vary widely. Simply being different does not mean it's wrong. Also, this material is not all-inclusive. You will likely see and discuss issues not mentioned in this guide. Those additional issues are both valid and pertinent to the topic. Such discussion is encouraged.

When asking the **Five Key Questions** Karen should be looking for the following:

1. "What is happening?"

Karen should immediately learn:

- the processes that the laboratory performs;
- possible sources of emissions and releases, and the potential for these;
- what the people are doing and how they do it; and
- why each person is performing a particular task.

Karen should perform a preliminary survey of the facility's operations. This is to determine obvious "good" and "bad" practices. Good housekeeping of the facility and the professional manner in which personnel perform their work are good indicators of how well the facility is in compliance with state and Federal laws. Likewise, poor housekeeping is an indication that people may be unprofessional and not well disciplined in their work practices. This can be a good indicator that state and Federal laws are not being adhered to.

These are examples of the observations that should have been made when

asking “What is going on?”

2. "What 'questions' should I ask?”

Karen needs to ask “What permits are required for this laboratory to operate?” An analytical lab will deal with Clean Air Act, RCRA, Clean Water Act (CWA), and may need a National Pollutant Discharge Elimination System (NPDES) permit under the CWA. Then, what is the relationship with the city and municipal services? For example, where does solid waste residue go?

Are any releases to the environment permitted?

Is a program in place to prevent accidental release?

If the laboratory did accidentally release a hazardous substance, do the lab personnel know who must be notified? Is there an emergency notification procedure for the laboratory?

Next, she will want to know who is in charge? . . . what is the organization structure? . . . what is the history of operations and any related problems? . . . and what are the current “hot” issues?

3. "What research should I do?”

For a newly assigned Environmental Rep the research should take two forms:

First, what guides the operation? . . . and second, how does the facility <u>really</u> operate?

Karen should ask to see:

- A copy of laboratory procedures and permits to determine the specific terms and conditions under which they operate.
- Any Clean Air Act permits, Title V: Permits, which the laboratory is subject to. This must be reviewed to determine operating terms and conditions.
- Title III of the CAA, “Hazardous Air Pollutants.”
- Associated with this CAA permit will be requirements with NESHAP

regulations. See 40 CFR 61.

- Clean Water Act. Also, if the facility discharges to the waters of the United States as a result of laboratory operations, they will be subject to a National Pollutant Discharge Elimination System (NPDES) permit.

- The Safe Drinking Water Act will have to be assessed in relationship to the impacts the facility may have on potential contamination to the drinking water of the surrounding communities.

- Likewise, the facility will be subject to Storm Water Pollution Prevention provisions with respect to protection of the groundwater and surface waters.

- The facility's Spill Prevention Control and Countermeasures plan.

- The potential for migration of any and all hazardous constituents from the water, soil, or air.

- Assess operating practices against the above requirements and note any deviations.

- If no permits are required, Karen should have a written assessment of why that is the case.

- This is not all inclusive. Karen should look at any other federal, state, or local requirements and agreements that may be imposed on the facility.

4. "What rules apply?"

The rules that apply are generally reflected in operating procedures that are based on the permits, laws, and policies that are in effect regarding laboratory functions. A first clue is Karen's statement that she needed to know the relationship between the laboratory and city. She also needs to know the hazards associated with work performed for the TSD and the CERCLA site.

As an example, dumping of a sample down a laboratory sink even if the laboratory has a pretreatment permit is not permitted. The facility is still under the requirements of 40 CFR 262 for generators to characterized their wastes to determine if they are hazardous or not before disposal.

A ***partial*** list follows:

- 40 CFR 61 Subpart H, “NESHAP regulations”
- 40 CFR 264, “Standards for Owners and Operators of Hazardous Waste Treatment, Storage and Disposal Facilities”
- 40 CFR 270, “EPA Administered Permit Programs: The Hazardous Waste Permit Program”
- Clean Air Act: Pre 1990 version was codified at 42 U.S.C. §§7401-7626. The 1990 amendments added comprehensive provisions to regulate emissions of toxic air pollutants (section 112), acid rain (Title IV), and substances thought to threaten the ozone layer (Title VI), permit program (Title V), and strengthened enforcement provisions (section 113) and requirements for nonattainment areas, mobile source emissions, and automotive fuels. (See also 40 CFR Subchapter C)
- Clean Water Act: 33 U.S.C. §§ 1251-1376, Pub. L. No. 92-500, 86 Stat. 16 (1972); 33 U.S.C. §§ 1401-1445, Pub. L. No. 92-536, 86 Stat. 1052 (1972); Pub. L. No. 95-217, 91 Stat. 1567 (1977); Pub. L. No. 95-576, 92 Stat. 2467 (1978); Pub. L. No. 97-117, 95 Stat. 1623 (1981); Pub. L. No. 100-4, 101 Stat. 76 (1987). (See also 40 CFR Subchapter D)
- Storm Water Pollution Prevention. (See also 40 CFR Subchapter D)
- Safe Drinking Water Act: 42 U.S.C. §§ 300f-300j-11; Pub. L. No. 93-523, 88 Stat. 1661 (1974); Pub. L. No. 99-339, 100 Stat. 666 (1986). (See also 40 CFR Subchapter D)
- Superfund, Emergency Planing, and Community Right to Know Act, 40 CFR Subchapter J
- Toxic Substances Control Act (TSCA). (See also 40 CFR Subchapter R)
- Department of Transportation rules (49 CR).

The above is not an inclusive list. Many other Federal laws may apply. It also does not address state or local laws, contractor procedures, or agreements among stakeholders. Martin needs to know all of the regulations that have

bearing on facility operations.

These examples show how these regulations should be applied. They also help to answer the fifth question:

5. "What are the overlaps (interrelationships), if any?"

Most of the "overlaps" that Karen will encounter will deal with her roles of Facility Rep and Environmental Rep. Keeping those tasks sorted out will not be easy. Likewise, there will be city, state and Federal laws, agreements, and procedures that have to be sorted out. Karen needs to know which rule applies and which authority has primacy. A brief list to consider follows:

- A copy of the facility's RCRA final permit for their TSD determines the specific terms and conditions under which the TSD is to operate. To have received a final permit the facility will have completed submission of a RCRA Part A Permit Application, followed by submission of a RCRA Part B Permit Application. After several stages of review, the state (if authorized by EPA) will have issued the facility an operating permit.

- 40 CFR 270, "EPA Administered Permit Programs: The Hazardous Waste Permit Program," details the permit process. [NOTE: Reviewing the history (operational documents, notice of deficiency response, facility background information, etc.) for the RCRA Part B permit application can provide valuable insight about the facility's operation both past and present.]

- Karen must review any Clean Air Act permits, Title V: Permits, which the facility is subject to.

- She would also want to review Title III, "Hazardous Air Pollutants" of the CAA. Associated with this CAA permit will be requirements with NESHAPS regulations.

- Radiological NESHAPS regulations (40 CFR 61 Subpart H) require DOE facilities to limit the annual effective dose equivalent to any member of the public to 10 mrem or less.

- Karen must review any Clean Water Act provisions the facility may be subject to. For example, if the facility discharges to the waters of the United States whether or not as a result of waste treatment operations, they will be subject

to a National Pollutant Discharge Elimination System (NPDES) permit.

- Likewise, the facility will be subject to Storm Water Pollution Prevention provisions. There are permits that the facility may be subject to with respect to protection of the groundwater and surface waters.

- She will need to review the facility's Spill Prevention Control and Countermeasures plan.

- The Safe Drinking Water Act will have to be assessed in relationship to the impacts the facility may have on potential contamination to the drinking water of the surrounding communities. [NOTE: Examination of the facility's monitoring program in conjunction with the community's monitoring program is a potential source of information to determine if the lab operation is having any adverse impacts on the community's drinking water or any other environmental media.]

- Karen must evaluate the potential for migration of any and all hazardous constituents from the water, soil, or air and apply the applicable standard.

- The above is not all inclusive. Sh should look at other federal, state, or local requirements that may be imposed on the facility.

And an added question . . .

What kinds of issues should Karen consider?

Karen is responsible for oversight and compliance of any activity covered by the laws mentioned in the five key questions. She is interested in any process that could yield an emission that may be released to the public or the environment.

She is responsible for oversight of contractor operations and for compliance in all areas.

RESTART THE TAPE

PART II - This time be more specific in your responses. Identify the activities being performed and, more preciecly, what are the requirements.

Example: Emissions to the air from laboratory operations require permits from the State EPA that establish emission limits that must be monitored and controlled.

Before you stopped the tape, Sharon asked the **five key questions**.

1. "What is happening?"
2. "What 'questions' should I ask?"
3. "What research should I do?"
4. "What 'rules' apply?"
5. "What are the overlaps (interrelationships), if any?"

Stop the video tape when asked and take a few minutes to answer the five key questions by indicating what actions Karen should take. These questions start on page 13. When you are finished compare your answers to the information listed on page 15 and continue the video when ready.

The Five Key Questions

1. "What is happening?"

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2. "What 'questions' should I ask?"

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3. "What research should I do?"

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4. "What 'rules' apply?"

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5. "What are the overlaps (interrelationships), if any**?"**

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ANSWERS - The following are answers to the five questions that you should have come up with:

1. "What is happening?"

Karen has discovered what appears to be lax compliance with the handling of samples and in general lab management practices. Rather than maintaining an objective distance, she chose to become involved in solving the problems. This lead to a loss of objectivity and ineffective oversight of compliance.

2. "What 'questions' should I ask?"

She needs to know general information regarding lab operations. Does the lab exhaust chemical constituents to the air though lab hoods? Do they have their own water treatment facility and discharge to the river with an NPDES permit? Or, do they discharge liquid effluent to the city's publicly owned treatment works (POTW) under a pretreatment permit or agreement with the city? Where does the solid waste residue go? Is it handled as a hazardous waste and shipped to a TSDF? Or, do they treat it and send it to a Subtitle D (municipal) landfill? Is their a risk of mixing wastes creating an impermissible dilution? Or, is there a risk of mixing radiologically contaminated residues in with wastes being disposed of in various ways.

Karen needs to be asking about the history of those samples especially with regard to disposal. Does the lab have more legacy samples stored somewhere else in the facility? How do they know?

3. "What research should I do?"

She should become familiar with the provision of all permits and agreements.

Karen needs to be looking at the paper trail for the work done at the facility. She should be reviewing the contractual arrangements for each of the parties involved. She should also be looking carefully at how these samples were handled in the lab, how they arrived, are analyzed, stored, potentially commingled, requirements for return of excess and analyzed samples to the owner, etc. There should be clear procedures and they should be followed.

Karen needs to be asking about the history of those samples especially with regard to disposal. Does the lab have other legacy samples stored somewhere

in the facility? Are there areas where “surprise” wastes may be found?

If the lab got into trouble for Storm Water Pollution Prevention Problems, then there is likely releases from the facility somewhere. Is it from the lab vent stacks? Or is it from spills as waste is shipped from the facility? Karen must identify the sources of release first. Reconfiguration of the drains may indicate that the lab has been releasing for several years. This lab could potentially be a CERCLA site. Where does the lab release its sewer to? Is there any possibility that lab waste is being discharge to the sewer? Does the lab have a monitoring system to indicate if a release occurs? Is the lab under a pretreatment permit to the city POTW?

The lab has a permitted TSD unit. Personnel must be properly trained under 40 CFR 264.16 or 40 CFR 265.16 as applicable.

The emergency response program must meet the needs of the community as well as the lab.

What is the waste characterization policy of the lab? As a waste generator, does the laboratory follow 40 CFR 262, Generator Requirements, as well as the TSD requirements as applicable?

What administrative and training measures are being taken to ensure compliance?

4. "What ‘rules’ apply?”

The lab has a permitted TSD unit. Personnel must be properly trained under 40 CFR 264.16 or 40 CFR 265.16 as applicable.

Laboratory emergency response plans must meet the needs of the community and the lab. Community Right-to-Know is a critical issue. Is the community really aware of what is happening at the lab? Is the lab prepared for a release that may affect the public? Is the public at risk in any way?

This close to the river a release may endanger the Waters of the US. Many aspects of the Clean Water Act must be examined.

Samples coming in are not hazardous waste and are generally not subject to manifesting rules under EPA. However, materials leaving the facility will be

under hazardous waste rules requiring manifesting. Department of Transportation rules must be strictly followed (see 49 CFR).

Internal Procedures are significant. In the case of sample management, holding times for samples are critical. They must be properly shipped maintaining a positive chain-of-custody at all points. They must be preserved and held at the appropriate temperatures. There is a narrow time in which the lab must test them before the results are considered invalid. And, there must be auditable documentation that confirms these controls have been met.

5. "What are the overlaps (interrelationships), if any**?"**

Karen has two issues with overlaps:

1. Overlaps with her Facility Rep duties and her Environmental Rep duties.

2. Overlaps in Federal, state, city, and laboratory laws, agreements, permits, policies, and procedures.

RESTART THE TAPE

PART III - What happened to Karen?

Karen and Sharon have discussed her situation. Sharon asks you what you can do to prevent a similar experience.

What can you do?

When you are finished compare your answers to those listed on page 20 and continue the video when ready:

ANSWERS - The following are recommended solutions that you should have come up with:

Karen's self-assessment using the five key questions lead her to see what she should have done differently. It was mostly a matter of proper business roles and relationships. She is well on the way to correcting these problems now that the roles are sorted out.

In this case, Karen's problems came from:

> Loosing objectivity as an Environmental Engineer. Her commitment shifted from performance oversight to lab staff support. This can easily happen to anyone working at an isolated location where there is little or no physical separation from the organization being monitored. It's called "going native."
>
> Systematic documentation of problems as they occurred and reporting them to higher authorities was a serious omission. Patterns of noncompliance would have been evident and prompt corrective action more likely.
>
> Maintaining objectivity and separating responsibilities are essential to situations where a person is "dual-hatted."

RESTART THE TAPE

PART IV -

Welcome to the DOE Environmental Internet Mail List

An Internet mail list was created for DOE Environmental Representatives, Nuclear Safety Engineers, and Facility Representatives providing them with a means of personally networking across the complex. This is an opportunity to discuss topics of general interest and raise questions for colleagues across the complex to consider.

It's a new list. People must sign on to participate - so share the information.

There is no cost to subscribe. To subscribe, send an e-mail message to:
majordomo@wastenot.inel.gov

There does not have to be a "subject." In the text of the message state:
subscribe doe-env
end

Then send the note. The list moderator will add you to the list and you will see your initial note come back to you - that tells you that you are subscribed. To cancel your subscription send another note to the **majordomo** with the message that reads: **unsubscribe doe-env** And your account will be history.

To send a note to everyone on the mail list address an e-mail note to:
doe-env@wastenot.inel.gov Make the subject line the topic of the note. Then fill in the text.

Your first assignment: Send a message introducing you to the list. Tell others your name, location, what you are involved in and some of your key issues. When you send the note it will be automatically routed to all of the people on the mail list.

To respond to a note that someone else sent, simply do a "reply." It will go back to the mail router and be distributed to everyone on the list.

Always put your name, e-mail address and any other identifier that you like on your messages. People often like to respond to others directly. If you receive private notes that are pertinent to the list, share them with the list **after asking permission from the writer** (Some folks are shy).

Keep in mind, this is a public forum designed for DOE personnel - still, don't say anything you wouldn't want to see in the Washington Post.